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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,321	05/02/2005	Leonard A. Pomeranz	20030016	5294
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BAE SYSTEMS PO BOX 868 NASHUA, NH 03061-0868			EXAMINER CARTER, MICHAEL W	
			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/533,321

Applicant(s)

POMERANZ, LEONARD A.

Examiner

MICHAEL CARTER

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5,9-11,13 and 15-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,9-11,13 and 15-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. **Claims 3, 6-8, 12 and 14** have been canceled.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. **Claims 1, 2 and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Esterowitz et al. US Patent 6,358,243 (hereinafter referred to as '243) in view of Austerlitz et al. US Patent 4,965,803 (hereinafter referred to as '803) and further in view of Telfair et al. US PG Pub 2002/0133146 (hereinafter referred to as Telfair).
4. For claims 1 and 5, Esterowitz teaches a method of pumping a wide bandwidth optical parametric oscillator to provide mid-IR radiation output (figure 1), comprising the step of pumping the optical parametric oscillator with a laser using a wavelength of about 2 microns operating by itself as a pump source (figure 1, label 11) for the optical parametric oscillator, wherein the optical parametric oscillator includes a zinc germanium phosphide non-linear crystal (figure 1, label 13 and column 4, lines 1-8) and wherein the crystal generates a signal beam (6.45 μm , column 5, line 1) and an idler beam (2.8 μm , column 5, lines 1-2) that are all part of the output from the optical parametric oscillator (column 5, lines 2-3).
5. Reference '243 does not teach the laser is a thulium laser or that there are two zinc germanium phosphide non-linear crystals used in the opo.
6. However, thulium lasers are well known in the art as shown by reference '803, which shows a Thulium laser which operates at 2 microns (figure 1 and abstract). The

particular laser used in '243 does not appear critical to the operation of the device, therefore it would have been obvious to one skilled in the art to substitute the known laser of '803 into the system of '243 by an obvious engineering design choice.

7. The above combination does not teach there are two zinc germanium phosphide non-linear crystals used in the opo.

8. However, Telfair teaches using two nonlinear crystals in order to increase conversion and reduce threshold (paragraph 39).

9. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine multiple crystals taught by Telfair with the previous combination in order to increase conversion and reduce threshold.

10. **For claim 2**, '803 teaches the Thulium laser utilizes a YAlO_3 host (column 4, lines 1-11). While '803 discloses YAIO instead of YAlO_3 , YAIO is an acronym for YAlO_3 (see teaching reference Sheps US Patent 6,404,785, column 1, lines 50-51). This interpretation is further supported by the specification of the instant application (page 6, lines 10-11).

11. **For claim 4**, '803 further teaches the Thulium laser is Q-switched (figure 1, label 29 and column 1, line 54).

12. **Claims 9-11, 15-22, and 24** remain rejected under 35 U.S.C. 103(a) as being unpatentable over '243 in view of '803, and further in view of Smith et al. US Patent 6,647,033 (hereinafter referred to as Smith) according to the previous office action mailed 3/19/2008 .

13. **Claim 13 and 23** remain rejected under 35 U.S.C. 103(a) as being unpatentable over '243 in view of '803, and Smith, and further in view of Komine, US patent 6,215,800 (hereinafter referred to as Komine) according to the previous office action mailed 3/19/2008 .

Response to Arguments

14. Applicant's arguments with respect to claims 1, 2, 4, and 5 have been considered but are moot in view of the new ground(s) of rejection necessitated by amendment.

15. Applicant's arguments filed 9/18/2008 regarding claims 9-11, 13, 15-24 have been fully considered but they are not persuasive. In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991). Regarding motivation, the examiner listed motivations for the combinations in claims 9-11, 15-22 and 24 in the previous office action, mailed 3/19/2008, and invites the applicant to call and further discuss motivations listed by the examiner.

16. For claims 13 and 23, the applicant further argues that the applicant's opo comprises the signal and idler beam while the Komine reference teaches mixing two of these beams to get a difference signal. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., output beam comprise the signal and the idler) are not recited in the rejected claim(s). Although the claims are interpreted in light of

the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

17. Further, while the applicant points to column 4, lines 1-8 to illustrate the alleged difference between the invention and the prior art, the examiner is relying on the example in column 2, lines 37-41 where two crystals are taught to increase interaction length and increase efficiency.

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

19. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Carter whose telephone number is (571) 270-1872. The examiner can normally be reached on Monday-Friday, 7:00 a.m.-4:30 p.m., EST.

21. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

22. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MC/

/Minsun Harvey/
Supervisory Patent Examiner, Art Unit 2828